

REMARKS

Claims 6, 10, 18-26, and 28 have been amended.

More particularly, Claim 6 has been amended to incorporate the features of Claim 7, which has been canceled without prejudice.

Claim 10 has been amended to correct an obvious typographical error and thus for reasons unrelated to patentability.

Support for the amendment of Claim 18 appears in the specification at least at: page 16, line 17 to page 19, line 30; page 20, lines 11-21; and in FIGS. 1, 4A, 4B, 4C and 4D. Claims 19-22, 26 have been amended for consistency with the amendment of Claim 18.

Claims 23-25 have been amended to be in independent form and to include the features of the base Claim 18.

Claim 28 has been amended to incorporate the features of Claim 33, which has been canceled without prejudice. Further support for the amendment of Claim 33 appears in the specification at least at page 23, line 13-30 and in FIGS. 2, 5A, 5B, and 5C.

The headings below are numbered to correspond with the heading numbering used by the Examiner in the Office Action.

1/2. Claims 6, 8-9, 28-32 are novel of applicants admitted prior art (AAPA).

Claim 7 and 33 have been canceled without prejudice thus obviating the rejection of these claims.

Regarding Claim 6, the Examiner states:

The applicant discloses "a die orientation step 1210" where a first die eye box and a die eye point are set on the edge of the die that contains two or more bond pads. ... Additionally, **the bond pads disclosed within the die eye box** can be considered to be a specific pattern. (Office Action, pages 4-5, emphasis added.)

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Accordingly, the Examiner admits that the die eye box encompasses the bond pads. For at least this reason, AAPA does not teach or disclose:

A method for recognizing patterns, the method comprising:

a lead frame orientation detecting step of sensing a hole number of a lead frame seated on a heater block and determining whether or not the lead frame is seated in an exact first position;

a first lead frame indexing step of setting a lead eye box and a lead eye point on one tie bar of the lead frame with a camera before clamping the lead frame with a clamp, and determining whether or not the lead frame is seated in the exact first position;

a second lead frame indexing step of setting lead eye boxes and lead eye points on two tie bars of the lead frame with the camera after clamping the lead frame with the clamp, and redetermining whether or not the lead frame is seated in the exact first position;

a Video Lead Locate step of capturing positions of leads of the lead frame with the camera and memorizing the positions; and

a die orientation detecting step of **setting die eye boxes and die eye points on specific patterns adjacent edges of a die and located outside of bond pads of the die** with the camera and determining whether or not the die is mounted in an exact second position,

as recited in amended Claim 6, emphasis added. Accordingly, Claim 6 is allowable over AAPA.

As set forth in Applicants' specification at page 23, line 31 to page 24, line 6:

Moreover, the die eye boxes DEBs and die eye points DEPs are set outside the rows, on which the bond pads P are arranged. Therefore, in stark contrast to the conventional method, in the present invention, the picture recognition rate of the PRS is prevented from being reduced by the probe marks 31 formed on the bond pads P. Namely, even though the bond pads P are pitched finely and the area of the probe marks 31 formed on the bond pads P becomes similar to the area of the bond pads P, since the die eye boxes DEBs and die eye points DEPs adopt not the bond pads P but the specific patterns 32 formed outside the bond pads P as

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the basic picture, the picture recognition rate of the PRS is improved. (Emphasis added.)

Claims 8-9, which depend from Claim 6, are allowable for at least the same reasons as Claim 6.

For similar reasons, AAPA does not teach or suggest:

A method of detecting an orientation of a die comprising:

setting a first die eye box and a first die eye point on a specific pattern adjacent an edge of a die and located outside of bond pads of the die;

capturing a first picture inside of the first die eye box; and

comparing the first picture to a control picture stored in a memory,

as recited in amended Claim 28, emphasis added. Accordingly, Claim 28 is allowable over AAPA. Claims 29-32, which depend from Claim 28, are allowable for at least the same reasons as Claim 28.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection

3. Claims 18 and 28 are novel over Ito (5,406,700).

Regarding Ito, the Examiner states:

... As seen in Fig. 2 labeled 20a a lead eye box is set on an unsymmetrical portion, and a corner point is found 21a (lead eye point). (Office Action, page 5.)

Applicants respectfully submit that the Examiner has failed to call out where Ito teaches or suggest a second lead eye box.

For at least the above reasons, Ito does not teach or suggest:

A method of detecting an orientation of a substrate comprising:

setting a first lead eye box and a first lead eye point on a first unsymmetrical part of the substrate **and a second lead eye box and a second lead eye point on a second unsymmetrical part of the substrate;**

capturing a first picture inside of the first lead eye box **and a second picture inside of the second lead eye box;** and

comparing the first picture to a first control picture **and the second picture to a second control picture,** the first control picture and the second control picture being stored in a memory,

as recited in amended Claim 18, emphasis added. Accordingly, Claim 18 is allowable over Ito. Claim 20, which depends from Claim 18, is allowable for at least the same reasons as Claim 18.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

4/5. Claims 19 and 20 are patentable over Ito.

As set forth above, Claim 18 is allowable over Ito. Claims 19 and 20, which depend from Claim 18, are allowable over Ito for at least the same reasons as Claim 18.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

6. Claims 21 and 26 are patentable over Ito in view of Applicants admitted prior art (AAPA).

As set forth above, Claim 18 is allowable over Ito. Claims 21 and 26, which depend from Claim 18, are allowable over Ito for at least the same reasons as Claim 18. AAPA does not cure the previously described deficiencies in Ito. Accordingly, Claims 21 and 26 are allowable over Ito in view of AAPA.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

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7. Claims 18, 22, 28-29, 31-32 are patentable over Moon (5,796,161) in view of Ito.

Claim 33 has been canceled without prejudice thus obviating the rejection this claim.

As to Claims 18 and 22.

At page 13 of the Office Action under Allowable Subject Matter, the Examiner admits:

In Moons method, which is the closest prior art **only one lead eye box is used** to image a gate through a clamp. Moon fails to use a second lead eye box to capture an image of a support bar outside of the clamp to correct the orientation. (Emphasis added.)

Further, as discussed above under heading 3, the Examiner has failed to call out where Ito teaches or suggest a second lead eye box.

For at least these reasons, Moon in view of Ito does not teach or suggest:

A method of detecting an orientation of a substrate comprising:

setting a first lead eye box and a first lead eye point on a first unsymmetrical part of the substrate **and a second lead eye box and a second lead eye point on a second unsymmetrical part of the substrate;**

capturing a first picture inside of the first lead eye box **and a second picture inside of the second lead eye box;** and

comparing the first picture to a first control picture **and the second picture to a second control picture,** the first control picture and the second control picture being stored in a memory,

as recited in amended Claim 18, emphasis added. Accordingly, Claim 18 is allowable over Moon in view of Ito. Claim 22, which depends from Claim 18, is allowable for at least the same reasons as Claim 18.

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As to Claims 28-29, 31-32.

With regards to Moon, the Examiner states:

Moon discloses a method of aligning a lead frame strip in a wire bonding process (col. 1 lines 15-12). Further disclosed are multiple die sensing regions (17 and 18 of figure 5a and 6) that expose corner portions of the die (col. 4 lines 47-49). ... Also there are **die bonds on a die that would form a meaningful pattern.** (Office Action, page 9, emphasis added.)

Accordingly, the Examiner asserts multiple die sensing regions and that die bonds on a die that would form a meaningful pattern.

For at least this reason, Moon does not teach or suggest:

A method of detecting an orientation of a die comprising:

setting a first die eye box and a first die eye point **on a specific pattern adjacent an edge of a die and located outside of bond pads of the die;**

capturing a first picture inside of the first die eye box; and

comparing the first picture to a control picture stored in a memory,

as recited in amended Claim 28, emphasis added.

Ito does not cure this deficiency in Moon. Accordingly, Claim 28 is allowable over Moon in view of Ito. Claims 29, 31-32, which depend from Claim 28, are allowable for at least the same reasons as Claim 28.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

8. Claims 23-25 are patentable over Moon in view of Ito further in view of Roberts et al. (6,577,019).

The Examiner admits:

Regarding claims 23-25 the combination of Moon and Ito does not explicitly disclose that the gate that is imaged through the window comprises the dent part of

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the gate, a plated layer on the gate, or a support bar.
(Office Action, page 11.)

To cure this deficiency in Moon and Ito, the Examiner further asserts:

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine Moon and Ito in the manner described above, and to further combine the teachings of Roberts in order to obtain a lead sensing window set on an unsymmetrical part of the lead frame in order to insure proper orientation. Any unsymmetrical object would make the system feasible including a plated layer, a dent part or a support bar and a selection of one of the following would be a design choice. (Office Action, page 12.)

Applicants respectfully submit that the Examiner is improperly using hindsight reconstruction to deprecate Applicants' claimed invention.

For at least the above reasons, Moon in view of Ito in further view of Roberts et al. does not teach or suggest:

A method of detecting an orientation of a substrate comprising:
setting a first lead eye box and a first lead eye point on an unsymmetrical part of the substrate, **wherein the unsymmetrical part comprises a dent part of a gate;**
capturing a first picture inside of the first lead eye box; and
comparing the first picture to a control picture stored in a memory,

as recited in amended Claim 23, emphasis added. Accordingly, Claim 23 is allowable over Moon in view of Ito in further view of Roberts et al.

Further, for at least the above reasons, Moon in view of Ito in further view of Roberts et al. does not teach or suggest:

A method of detecting an orientation of a substrate comprising:

setting a first lead eye box and a first lead eye point on an unsymmetrical part of the substrate, **wherein the unsymmetrical part comprises a plated layer on a gate;**

capturing a first picture inside of the first lead eye box; and

comparing the first picture to a control picture stored in a memory,

as recited in amended Claim 24, emphasis added. Accordingly, Claim 24 is allowable over Moon in view of Ito in further view of Roberts et al.

Still further, for at least the above reasons, Moon in view of Ito in further view of Roberts et al. does not teach or suggest:

A method of detecting an orientation of a substrate comprising:

setting a first lead eye box and a first lead eye point on an unsymmetrical part of the substrate,

wherein the unsymmetrical part comprises a support bar;

capturing a first picture inside of the first lead eye box; and

comparing the first picture to a control picture stored in a memory,

as recited in amended Claim 25, emphasis added. Accordingly, Claim 25 is allowable over Moon in view of Ito in further view of Roberts et al.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

9. Claim 30 is patentable over Moon in view of Ito and further in view of applicants admitted prior art (AAPA).

As set forth above under heading 7, Claim 28 is allowable over Moon in view of Ito. Claim 30, which depends from Claim 28, is allowable over Moon in view of Ito for at least the same reasons as Claim 28. AAPA does not cure the previously described deficiencies in Moon in view of Ito. Accordingly, Claim 30 is allowable over Moon in view of Ito and further in view of AAPA.

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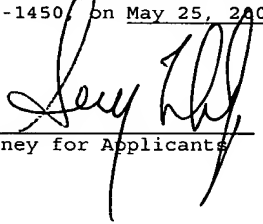
For the above reasons, Applicants respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

Claims 1-6, 8-32 are pending in the application. For the foregoing reasons, Applicants respectfully request allowance of all pending claims. If the Examiner has any questions relating to the above, the Examiner is respectfully requested to telephone the undersigned Attorney for Applicants.

CERTIFICATE OF MAILING

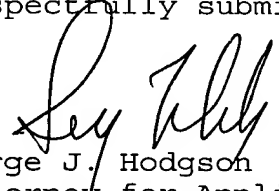
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 25, 2004.



Attorney for Applicants

May 25, 2004
Date of Signature

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